

## AMENDMENTS TO THE SPECIFICATION

On page 2, please replace paragraph 3 with the following:

[0003] The benefits of being able to test wires and cables (hereinafter to be referred to as a cable) are many. Some reasons are obvious. For example, cables are used in many pieces of equipment that can have catastrophic results if the equipment fails. A good example of this is an airliner. However, the consequences of non-performance do not have to be so dire in order to see that benefits are still to be gained. For example, cables are used in many locations where they are difficult to reach, such as in the infrastructure of buildings and homes. Essentially, in many cases it is simply not practical to remove cable for testing, especially when this action can cause more damage than it prevents.

On page 5, please replace paragraph 7 with the following:

[0007] It is noted that TDR is not the only prior art technique available for cable testing. In standing wave reflectometry (SWR), a signal is transmitted and a reflected signal is received at a directional coupler. The system then measures the magnitude of the reflected signal. A short circuit, an open circuit, and the depth of a null gives the same information as TDR. However,

this technique is generally less accurate and nearly as expensive.

On page 5, please replace paragraph 9 with the following:

[0009] Accordingly, it would be an advantage over the prior art to provide a system for cable testing that is relatively smaller and therefore usable in more locations that are otherwise more difficult to reach with state of the art cable testing equipment. It would be another advantage to provide a system that would be less costly because of the nature of the components utilized therein. It would be another advantage to provide a system that is more likely to be used because it is not as difficult to use as the prior art cable testing equipment, and can be automated for regular testing even by unskilled personnel.

On page 11, please replace paragraph 30 with the following:

[0030] When the input signal  $F_A$  is generated by the VCO 20, the input signal  $F_A$  is reflected at the load 30, and is passed back along the CUT 26. The reflected signal  $F_B$  is split from the CUT 26 using directional coupler 23 and is then received by the mixer 22. A combined output signal 32 is then read from the mixer 22 and sent to an analog to digital (A/D) converter 34. Because a mixer is a frequency multiplier, the combined output signal 32 of

the mixer 22 has three components: the input signal  $F_A$ , along with  $F_A + F_B$ , and  $F_A - F_B$ . It should be apparent that the components  $F_A$  and  $F_A + F_B$  are going to be high frequency signals, but  $F_A - F_B$  is not. Because  $F_A = F_B$ , it is a DC signal.

On page 12, please replace paragraph 32 with the following:

[0032] There are various methods that can be used to determine the number of cycles above. The FFT is a convenient system, and all of these methods are known to those skilled in the art. These methods include the Discrete Fourier Transform, the Two Equations - Two Unknowns method, N-Equations N-Unknowns, Interpolation and FFT, Interspersing Zero Points and Low Pass Filtering, Acceleration of Data Signal, Zero Crossing of Signals, and finally Mathematical Modeling.

On page 13, please replace paragraph 34 with the following:

[0034] The processor 38 generally serves another useful function other than performing the calculations that obtain the desired results. Specifically, it is desirable to use the processor 38 to control operation of the VCO 20. This is because the processor 38 can also be made capable of stepping the VCO 20 through various sets of frequencies in order to determine all of the desired

characteristics of the CUT 26. In other words, several frequencies in several different frequency bands could be analyzed using this method.

On page 13, please replace paragraph 35 with the following:

[0035] The implications of the simple circuit used in the FDR cable testing system 10 as described in figure 1 should not be overlooked. The FDR cable testing system 10 is capable of providing data regarding loads thereon, including open circuits, short circuits, capacitance, inductance, resistance, some very large chafes, frays, and other anomalies. As implemented, the FDR cable testing system also provides the length of the CUT 26 within approximately 3 to 7 centimeters. However, it is envisioned that this range can be controlled (reduced or increased) by varying the range and resolution of the frequencies used.

On page 14, please replace paragraph 36 with the following:

[0036] Figure 2 is an illustration of FDR cable testing system 100 providing additional detail not shown on the basic circuitry shown in figure 1. Figure 1 shows that a personal computer 102 is performing the functions of controlling the generation of an input signal, as well as the function of calculating the desired information

regarding a cable under test. The personal computer 102 is coupled to a sine wave generator such as the voltage-controlled oscillator 104. The VCO 104 receives a control signal in the form of an analog voltage from the personal computer 102, and generates at least one sine wave that is transmitted to the power divider 106 as an input signal. The power divider 106 in this embodiment is a 3dB power divider. However, a 20dB power divider or other value could be used. The power divider 106 is configured to split the input signal along two separate transmission paths 118 and 120. A mixer 114 receives the input signal transmitted along transmission path 118. The cable under test 110 receives the input signal transmitted along transmission path 120, through the directional coupler 108 and path 121.

On page 27, please replace paragraph 67 with the following:

[0067] Another important aspect of passive connectivity is that it is the only method of detection when testing live cables. In other words, cables that are still in use will likely generate signals that will interfere with the FDR electronics, and vice versa. While even passive connectivity methods can cause interference, it is possible to minimize the effects. For example, a live DC cable will not interfere with an inductively coupled FDR

**system.**